

REMARKS

In the Office Action dated August 13, 2003, claims 1-31 were presented for examination. Claims 1, 13 and 22 were rejected under 35 U.S.C. §102(b) as being anticipated by *Jippo*, U.S. Patent No. 5,432,915. Claims 2-12, 14-21, and 23-31 were objected to as being dependent upon a rejected base claims, and would be allowable if rewritten in independent form to include all of the limitation of the base claim and any intervening claims.

Applicant wishes to thank the Examiner for the careful and thorough review and action on the merits in this application. The following remarks are provided in support of the pending claims and responsive to the Office Action of August 13, 2003 for the pending application.

On November 12, 2003, Examiner Huynh, Examiner Dang, and Applicant's Attorney met for an Examiner's Interview. During the interview, claims 1, 13, and 22 were discussed. More specifically, the organization of the processors of Applicant's invention with respect to the layout of the processors of *Jippo* ('915). Applicant's Attorney stated that Applicant's processor are arranged in a hierarchy. Examiner Huynh responded with a position that a grouping of processors is equivalent to a hierarchy. In addition, the groups of locks claimed by Applicant were discussed. Specifically, an interruptible lock and a lock which waits using only local memory. Examiner Huynh took the position that a lock request assumes an interruption of another lock, and that a lock in a storage unit is equivalent to a lock using local memory. Applicant's Attorney reminded Examiner Huynh that the rejection provided in the First Office Action was based on 35 U.S.C. §102(b). Finally, the element of the rejected claims pertaining to the processing of the lock responsive to the hierarchy was discussed. Examiner Huynh asserted her position that *Jippo* grants locks on a first come first serve basis, and that such a process is responsive to the hierarchy of the processors. Applicant's Attorney expressly disagreed with Examiner Huynh and the position she has asserted.

In the Office Action of August 13, 2003, the Examiner assigned to the application rejected claims 1, 13 and 22 under 35 U.S.C. §102(b) as being anticipated by *Jippo* ('915). The

Jippo patent ('915) relates to an interprocessor communication system. More specifically, *Jippo* shows first and second processor groups. The first processor group contains a control processor unit and an IO processor unit. The first processor group has a control storage unit with the first and third locks stored therein. The second processor group contains four execution processor units. The second processor group has a control storage unit with a second lock stored therein. Communication among the processor groups and execution processor units is enabled through the use of buses. Lock and unlock requests are transmitted to the respective units through the associated buses and are assigned on a first-come first-serve basis.

Applicant's processors are organized into a hierarchy to enable a lock to be passed to a waiting process on an intra-quad basis when appropriate, and passed to a waiting processor on an inter-quad basis when a particular quad has been monopolizing the lock for an extended period of time. This hierarchical ranking of the processors together with processing the lock responsive to the hierarchy enables equitable access to and distribution of the lock in a heavy contention environment and thereby increases the efficiency of the system over the prior art. Accordingly, the hierarchical design of Applicant's processors together with the processing of the lock responsive to the Applicant's hierarchy enables the processors to achieve increased performance at both low and high levels of contention.

There is no teaching in *Jippo* for organizing any of the processors into a hierarchy or for processing a lock responsive to the hierarchy. A hierarchy is defined as "any arrangement of principles, things etc. in an ascending or descending order."¹ Rather, in *Jippo* the control processor unit (10) and the IO processor unit (11) are placed in one group, and the execution processor units (12-15) are placed in a second group. Col. 4, lines 53-57. A group is defined as "a number of persons or things classed together"². *Jippo* merely provides for two groups of processors, but does not provide for an ordering of the groups or the processors within the groups. By definition, such an ordering is required in order to have a hierarchical system. There

¹WEBSTER'S DICTIONARY 456 (encyclopedic ed. 1989), attached as Exhibit A.

²WEBSTER'S DICTIONARY 425 (encyclopedic ed. 1989), attached as Exhibit B.

is no provision in *Jippo* for giving priority for access to locks to one group over the other based on an assigned hierarchy. Accordingly, *Jippo* neither teaches nor implies Applicant's claimed invention as *Jippo* does not provide for an assigned hierarchical system as claimed by Applicant.

Furthermore, as Examiner Huynh acknowledged during the interview, the lock requests in *Jippo* are processed on a first come first serve basis. Applicant specifically claims that it's locks are processed responsive to the hierarchy, not on a first come first serve basis. More specifically, in Applicant's invention the placement of the processor requesting the lock in view of the hierarchical organization of the processors is determinative of processing of the lock. The locks of *Jippo* are merely responsive to a lock request and the locking and unlocking of the locking circuits. See Col. 5, lines 56-68 - Col. 6, line 1, and Col. 6, lines 13-18. Therefore, the locks of *Jippo* are not responsive to a hierarchy of processors, as the injection of such a hierarchical system into *Jippo* would in fact contradict *Jippo*'s very own stated system of assigning locks on a first come first serve basis. Accordingly, *Jippo* does not teach the hierarchical organization of the processors or a lock primitive for processing the lock responsive to the hierarchy of the processors, as such teaching would contradict *Jippo*'s lock assignment schema of assigning locks on a first come first serve basis.

In addition to *Jippo*'s lack of a hierarchical system, there is no teaching in *Jippo* for a lock that is interruptible. The locking circuit of *Jippo* cannot be interrupted. *Jippo* provides that a processor waiting for a lock must process a lock request and then wait for an unlock request to be generated. See Col. 6, lines 29-36. The fact that a processor may request a lock does not imply that the lock is interrupted. Rather, a lock request merely implies that the processor has a need for a lock. As *Jippo* provides for lock assignment on a first come first serve basis, it can reasonably be implied that a lock request merely queues the processors requests and provides that the requesting processor(es) await release of a lock so that the next processor in order of request (on a first come first serve basis) may then have the lock assigned to it. Accordingly, *Jippo* neither teaches nor implies an interruptible lock as taught and claimed by Applicant.

Additionally, there is no teaching in *Jippo* for a lock which waits for a lock to become

available using only memory local to the waiting processor. As represented in *Jippo*, the first and third locks of *Jippo* are in a control storage unit (16), and the second lock is in an operation storage unit (17). Even if for argument purposes the storage units (16) and (17) are presumed to be local to their respective processor group, storage unit (16) is remote to the second processor group and storage unit (17) is remote to the first processor group. Since each of the locks is accessible by each of the processors in both of the processor groups, *Jippo* does not distinguish between the use of local or remote memory and as such allows for a processor to wait using any available memory without limitation on location. Applicant's claimed invention provides that a processor waiting access to a lock only utilize that processor's local memory to maintain higher efficiency in the system. As there may always be a processor requesting a lock that is in a remote memory location, Applicant's system would differentiate between the lock requests based on the location of the processor and memory and provide priority to the local memory as a means of maintaining the efficiency of the system. Accordingly, *Jippo* neither teaches or implies Applicant's limitations of processor function that awaits a lock using only local memory.

In order for the claimed invention to be anticipated under 35 U.S.C. §102(b), the prior art must teach all claimed limitations presented by the claimed invention. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP §2131 (citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F. 2d 628, 631, 2 U.S.P.Q. 2d 1051, 1053 (Fed. Cir. 1987)). As mentioned above, *Jippo* does not show all of the elements as claimed by Applicant in pending claims 1, 13, and 22. Specifically, *Jippo* does not show a hierarchical grouping of processors, rather *Jippo* merely shows a grouping of processors without any differentiation between the groups. In addition, the lock of *Jippo* is processed on a first come first serve basis, a position that was also taken by Examiner Huynh during the interview which does not allow for a hierarchical system that would provide for lock requests to be taken out of order of the request. Applicant's lock is processed with consideration of the hierarchical grouping of the processors (*i.e.* not in a first come first serve order). Accordingly, *Jippo* clearly fails to teach the limitations pertaining to the hierarchical grouping of the processors as well the processing of the lock responsive to the hierarchical grouping of the processors as presented in Applicant's pending claims 1, 13 and 22.

Finally, "[a] previous patent anticipates a purported invention only where, except for insubstantial differences, it contains *all* of the same elements operating in the same fashion to perform an identical function." *Saunders v. Air-Flo Co.*, 646 F.2d 1201, 1203 (7th Cir. 1981) citing *Popeil Brothers, Inc. v. Schick Electric, Inc.*, 494 F. 2d 162, 164 (7th Cir. 1974) (holding patents were not invalid as being anticipated by or obvious in light of prior art) (*emphasis added*). *Jippo* does not anticipate the invention of Applicant based upon the legal definition of anticipation. Although the prior art cited by the Examiner relates to processors and locks associated therewith, *Jippo* fails to show each and every element as presented in Applicant's claimed invention. In fact, *Jippo* does not show processing a lock responsive to the hierarchy of the processors, the use of interruptible locks, or awaiting access to locks only on local memory. Rather, *Jippo* shows processing a lock on a first come first serve basis which conflicts with each of those claimed elements. Accordingly, Applicant respectfully requests the Examiner to remove the rejection of claims 1, 13 and 22, and to provide allowance of this application.

For the reasons outlined above, withdrawal of the rejection of record and an allowance of this application are respectfully requested.

Respectfully submitted,

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groundwater

ground-water (gráundwátér, gráundwítér) *n.* water beneath the land surface that feeds wells and springs and maintains the level of rivers and lakes in dry weather

ground wave a radio wave transmitted along the earth's surface (cf. SKY WAVE)

ground wire (elec.) a wire making a ground connection

ground-work (gráundwérk) *n.* a foundation, basis | essential basic labor or study | the background to an embroidered or other pattern etc.

ground zero the point on the surface of the ground or water at which or immediately below or above which an atomic bomb explodes

group (grúp) *1. n.* a number of people or things gathered closely together and considered as a whole, the crowd split up into smaller groups | an organized body of people with a common purpose, a research group | a number of persons or things classed together, a group of languages | (geol.) a system of rocks dating from a specified era | (chem.) a radical, a methyl group | one of eight major divisions of the periodic table (the vertical columns as it is usually constructed) containing elements whose atomic numbers bear a special periodic relation to each other and whose properties are closely related (e.g. halogens, inert gases, cf. PERIOD)

group (grúp) *2. n.* a set of elements and an operation (o.g. addition, multiplication or a symmetry operation) that obey the axioms of a group ("GROUP THEORY") | (in scientific classification) a cross-division falling outside the regular system | a blood group | (art, photo.) two or more figures or objects forming a compositional whole | an organizational unit in the R.A.F., combining a number of stations | a unit of an echelon in the U.S. Air Force next above a squadron

group (grúp) *3. v.* to put into groups | to arrange artistically, a well-grouped composition | to classify | to form a group (fr. *F. grouper* fr. Ital. prob. fr. *Grec*)

group captain an officer in the British Royal Air Force ranking below an air commodore and above a wing commander

group-er (grúper) *pl.* group-ers, group-er *n.* any of several members of *Serranidae*, a family of tropical fish common in warm seas (esp. the Caribbean), esp. a member of genus *Spinephorus* or *Myxoporus* (fr. Port. *gurupe*)

groupie (grúpi) *n.* 1. a follower of famous people, esp. a teenage follower of a rock 'n' roll singer. 2. a woman who follows celebrities for sexual association. Cf. *THEIRY BOFFER*

Group of 5 the five major non-Communist economic powers the U.S., West Germany, Great Britain, Japan, and France

Group of 77 group of developing countries that has its origins in the "Cancun of 75" developing countries organized preparatory to UNCTAD (United Nations Conference on Trade and Development, 1964) and expanded by two members to issue a "Joint Declaration of the 77 Developing Countries"

Group of 80 the Interim Committee of Finance Ministers of the International Monetary Fund (IMF) composed of the finance ministers of the five wealthiest IMF members. Cf. *GROUP OF FIVE*

Group of 24 a group formed in 1971 of finance ministers from the 24 developing-country members of the International Monetary Fund, representing eight countries from each of the African, Asian, and Latin American country groupings in the Group of 77

group theory 1. (nuclear phys.) method of studying neutron diffusion in a reactor core based on approximating the velocity of a member of a group. 2. (math.) study of classification of finite groups and the structure of all groups

group therapy (psych.) therapeutic technique in which a group of people meet regularly under direction of a trained leader to exchange experiences and interpersonal reactions to aid in understanding themselves

group-think (grúptink) *n.* 1. process of analyzing problems by a group with special talents. 2. accepting without questioning the predominant views on social, political, and ethical matters

group-pus-cule (grúpsjú) *n.* a minor group

gronose (gráus) *1. v.* pres. part. growing past and past part. grown to grumble 2. *n.* a fit of grumbling (origin unknown)

grouse *pl.* grouse *n.* any of several game birds of fam. *Tetraonidae*, having plump bodies and feathered legs ("CAPECAILLIE," "PTARMIGAN,"

425

gruntwork

"RED GROUSE," "RUFFED GROUSE" (origin unknown)

grout (gráut) *1. n.* thin mortar for filling cracks or spaces under pressure 2. *v.* to fill up with grout (O.E. *grūt*, coarse meal)

grove (gróuv) *n.* a group of trees without undergrowth growing naturally as if arranged by man | (of certain trees) an orchard, an orange grove

grovel (gróvél, gráivél) *pres. part.* groveling, *esp. Br.* grovelled *past and past part.* grovelled, *esp. Br.* grovelled *v.* to lie face down or crouch or crawl at someone's feet as if begging for mercy or favor | to abase oneself abjectly | to take pleasure in what is base, wallow groveling, *esp. Br.* groveling *adj.* abject | obsequious (back-formation fr. M.E. *grovelinge* adv., prob. fr. O.N. *a grafi*, on the face)

grow (gróu) *pres. part.* growing *past grew* (grú) *past part.* grown (grúum) *v.* to exist or develop as a living plant | to be cultivated, rice grows in China | to increase in size as a living organism | to increase in any way, become larger, support grow steadily for our policies | to become gradually, to grow old, it grew dark, you will grow used to it | (with the inf.) to come to, he grew to like her after a while | *v.* to cause to grow, cultivate, to grow vegetables | to allow to grow, to grow a beard | to develop, he has grown a habit of twitching his nose to grow into to become, she grew into a fine girl | to grow to fit (clothes) to grow on (or upon) to win favor with gradually, you may not like it as first but it grows on you to grow out of to become too big for, to grow out of one's clothes | to abandon in the process of maturing, to grow out of childish habits | to stem from, have as source, assertiveness may grow out of feelings of insecurity to grow together to become united by growth to grow up to reach adulthood | to become prevalent, the custom grew up of sacrificing to a god grower *n.* a plant that grows in a specified way, a fast grower | a person who grows vegetables etc., as distinguished from a distributor (O.E. *grōwen*)

growing pains pains in the limbs of children, popularly associated with growing | early difficulties in the development of an organization, project etc.

growl (grául) *1. n.* to make the characteristic threatening guttural sound of a dog | *v.* to utter in a gruff, rumbling voice, esp. angrily 2. *n.* the sound made in growling growler *n.* (Br., pop.) a four-wheeled horse-drawn cab | a small iceberg (limit)

grown *past part.* of GROW *adj.* having reached full size and maturity

grown-up 1. (grúmap) *adj.* adult, past adolescence 2. (grúmap) *n.* an adult (always in contradistinction to children)

growth (gróus) *n.* the process of growing or developing | increase in size, to measure the growth of a plant over a period of a week | origin, development, cultivation, a custom of foreign growth | something growing or grown, a growth of beard | a morbid formation such as a cancer or tumor | *adj.* (securities) of investments expected to increase in value due to expansion of the industry or the company (GROW)

growth center a place that provides sensitivity training

growth fund (securities) a mutual investment fund with a goal of capital appreciation rather than income, esp. specializing in growth stocks

growth hormone "HUMAN GROWTH HORMONE" *gróyne* "GROIN"

Grozny (grázi) town in U.S.S.R., the capital (pop. 379,000) of the Checheno-Ingush A.S.S.R., in the N. Caucasus, the center of a great oil field

grub (gráb) *n.* a maggot, caterpillar or any similar insect larva | (pop.) food (perh. fr. GRUB *v.*)

grub *pres. part.* grubbing *past and past part.* grubbed *v.* to dig or poke in the ground, to grub for roots | to search or work laboriously, grub through the old files | *v.* (with 'up' or 'out') to dig up or out | (with 'up' or 'out') to discover by | (with 'up' or 'out') to discover by

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CONCISE PRONUNCIATION KEY: (a) a, cat; (o) o, cot; (u) u, cut; (e) e, dress; (i) i, machine; (y) y, yes; (r) r, run; (l) l, leaf; (t) t, top; (d) d, day; (n) n, now; (ng) ng, long; (sh) sh, ship; (ch) ch, chair; (f) f, fish; (v) v, vein; (z) z, zone; (s) s, sea; (g) g, gear; (k) k, key; (j) j, joy; (w) w, wet; (h